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FURTHER NOTES ON ALBERTA LEPIDOPTERA.

BY F. H. WOLLEY DOD, MIDNAPORE, ALTA.

(Continued from page 98.)

369. *Pyrrhia exprimens* Walk.—I have compared this form with Walker's type from Orillia, Ontario, and consider it correctly named. *Angulata* Grote, from Buffalo, N.Y., is the same species. It is the one with almost blackish central shade and t.p. line, and blackish bordered secondaries. It stands wrongly in Dyar's Catalogue as a variety of *umbra* Hufn., a European species which should be struck out from our lists altogether, and place given to *cilisca* Guen. I have not, as a matter of fact, seen the type of *cilisca*, but Sir George Hampson has, and gives the locality as "Brazil" in the Catalogue. It is in Mons. Oberthiir's collection at Rennes. In the British Museum is a Kansas specimen from the Snow collection, marked "*cilisca* Guen," which I must assume has been compared with this type. This is the species figured by Holland as *umbra* Hufn., and is the *umbra* in error of all North American authors.

In *cilisca* the primaries have a crimson irroration which seems to be lacking in *exprimens*. The cross lines are finer and not blackish, and the central shade is less acutely angled in the cell. The secondaries are crimson-bordered, and not blackish. All my specimens of *cilisca* are from the Eastern States, and I have both this and *exprimens* from Milwaukee Co., Wisconsin. Both seem to occur all across the continent in the south, but I have not yet seen *cilisca* from Western Canada.

The European *umbra* combines some of the characters of the two, but I carefully examined the British Museum material, and all the British literature and figures in my possession, and it seems to me to be easily separable from both. It has the dark-bordered secondaries more like *exprimens* than *cilisca*, but the transverse lines are like those of the latter, though it usually lacks the pink irroration. I happen to have but a single example of *umbra* in

my own European collection, so I am unable to make further comparisons at present. Sir George Hampson unites them all as one species, under *umbra*, citing:

Ab. 1. *exprimens*.—Fore wing with the postmedial and terminal areas suffused with brown.—Canada and U.S.A.

Ab. 2. *cilisca*.—Hind wing paler yellow, the postmedial band pale crimson.—U.S.A. and Brazil.

373. *Cosmia decolor* Walk. (not *discolor*).—The type is a rather dark, smoky-suffused orange male from Orillia, Ontario, and is probably the one figured by Hampson, but the black streak shown near the inner margin is presumably an artist's error. *Discolor* of our lists was merely a mis-spelling, and the name unfortunately should stand as a synonym.

374. *C. infumata* Grt. = *punctirena* Smith.—Grote's type, a female from Malawqua Co. (?Chautauqua), New York, is a very dark fuscous-brown specimen. Of *punctirena* I have seen two types, male and female, from Yellowstone Park, Wyoming, in the Washington Museum. There is no type there from Cartwright as I previously stated. The types are a trifle reddish, even, and have the t.a. line angled rather than curved, but are certainly the same as *infumata*, and my tentative synonymy of this and *decolor* has proved correct. Sir George Hampson correctly keeps European *paleacea* distinct, but fails to recognize two North American species. I do not blame him. I have no modification to make of my former notes, and nothing to add, but I must admit that I should probably never have suspected, or, at any rate, been able to separate the two species if I had not had the opportunity of studying them in nature. As it is, I cannot always place specimens with certainty.

Hampson places them in the genus *Enargia* Hubn., and, as is his rule, changes the gender of the specific name to concord with that of the genus, thus making the name *decolora* Walk. He makes *infumata* ab.1. "Head, thorax and fore wing thickly irrorated with fuscous." "Ab. 2. Fore wing yellowish white, with slight dark irroration." This is a male from Lower Klamath River, California, and is a very pale whitish *decolor*. I have seen other similar specimens, and Dr. Barnes has such a female from Victoria, B. C., bearing a manuscript name. "Ab. 3. Fore wing pale yellow,

irrorated with red, the markings reddish." This specimen, from New York, is *decolor* also, and I have similar ones in my collection.

375. *Orthosia verberata* Smith.—I am perfectly satisfied as to the distinctness of this species from *ferrugineoides*. To my former notes I would add that this species generally has a more or less distinct claviform, which *ferrugineoides* lacks. I have both species from both Cartwright and Miniota, Manitoba. *Verberata* occurs at Kaslo, and on Vancouver Island, but I have not yet seen *ferrugineoides* fom west of the Rockies in Canada, though Hampson lists a specimen from Glenwood Springs, Colo. European *circellaris* Hufn., (*ferruginea* Schiff.) falls, as Hampson correctly places it, between the two. I have eleven British specimens, and have examined more at the British Museum. With a few of the specimens alone I should never have thought of separating it from *ferrugineoides*, and the secondaries in all are more evenly dark, with slightly darker veins and pale costal region, thus resembling *verberata*. There are vague traces of a claviform in a few specimens. In most the general coloration is nearest that of *verberata*—viz., interspersed with varying shades of brown and rufous. The transverse lines are more distinct than is generally the case in *ferrugineoides*, but less so than in *verberata*. Hampson finds that *verberata* has the frons black at sides, and separates it from the other two in the tables by this character. Brown, perhaps, describes it better, but the character is by no means an obvious one, some of my *verberata* having frons scarcely brown at sides at all, whereas some *circellaris* distinctly have.

It is interesting to note that in the present paper there are presented three instances in which a European species has two apparently distinct North American representatives.

EUROPEAN	N. AMERICAN
circellaris Hufn.	*ferrugineoides* Guen. and *verberata* Smith.
paleacea Esp.	*decolor* Walk. and *infumata* Grt.
umbra Hufn.	*cilisca* Guen. and *exprimens* Walk.

In two of these cases, however, I appear at present to be unsupported by other opinions.

376. *O. euroa* G. and R.—Grote changed the name to *puta*, to which Sir George Hampson gives preference. The two names therefore apply to the same type, but I have not discovered where that type is to be found. Presumably it ought to be in the collection of the American Entomological Society at Philadelphia. Smith described *dusca* in Ann. N. Y. Acad. Sci., xviii., 117, Jan. 1908, from Cartwright, Miniota and Winnipeg, Man., and Kaslo, B.C. I have seen a male and female type from Brandon and Miniota, and the type labels bear this name. But in an earlier paper (Trans. Am. Ent. Soc., xxxiii., pp. 350, 360), he makes reference to the form as *duscata*. Compared with *euroa*, it was stated to be "smaller, darker, with more diffuse maculation, and with shorter, broader primaries." Genitalic differences were referred to in the "Transactions." Calgary specimens do not differ from those from Manitoba, and Smith would obviously have called them *dusca*. As a whole, the species is perhaps usually smaller and darker in the west, but not constantly so, and I can see no reason whatsoever for treating the western form as distinct, and must refer *dusca* to the synonymy. Dr. Barnes told me some time ago that he was of the same opinion.

377. *Agroperina lineosa* Smith. (Journ. N. Y. Ent. Soc., xviii, 145, Sept. 1910).—Described from thirty specimens from Calgary and several Manitoba points. *Pendina* Smith, described as a species from the same localities in the same paper, is unquestionably a variety of the same thing, and is almost that form I referred to as "dark crimson." I have such an extreme form, but "deep luteous red-brown," as Smith describes it, is a more common variation and this is the "*morna*, ab. 2, deep rufous," of Hampson's Catalogue, vii., 405, his "ab. 1" being a pale rufous form, intermediate between the more common luteous *lineosa* and var. *pendina*. The actual specimen figured by Hampson as *morna*, from Yellowstone Park, Wyoming, is of the pale uniform, slightly marked form described by Smith in the same paper, also as a species, as *indela*, from various localities in Wyoming, Idaho, Colorado, Montana and Washington. The *morna* of Strecker, as I have pointed out under my No. 155 (xliii, 230, July, 1911), is not allied to this group at all. By Smith's own admission, *indela* and *lineosa* were very difficult to separate, and from the material I studied in his collec-

tion and elsewhere, it never occurred to me that two species existed at all. But as I happen to possess no specimens from any of the localities given for *indela*, I must give the form the benefit of the doubt, whilst expressing the belief that all the above names, with the exception, of course, of *morna* Streck., are probably only forms of *conradi*, which both Hampson and Smith claim to have from Calgary, and Smith also from Winnipeg. The type of *conradi* is a female in the British Museum, from Colorado, and is, as Grote describes it, "faded ocher brown, . . . the darker specimens having base and subterminal space a little paler, . . . s.t. line preceded by a diffuse darker shade." *Citima* Grote, type a female from Arizona, in the Neumœgen collection at Brooklyn, is like it, but darker and more strongly marked. It is correctly referred as a synonym by Hampson, and Smith accepted the reference. Hampson separated *conradi* from his "*morna*" in the tables by the pale s.t. area. Smith adds, "a rough powdery appearance." Both these characters hold in my only southern specimen, from Las Vegas Range, New Mexico, which I labelled as *conradi* after comparison in the British Museum. Some of the more strongly marked and contrasting Calgary specimens have been cited as *conradi* by both Sir George Hampson and Smith. I have no fault to find with that, except to say that none that I have yet seen from here are quite like the types of either *conradi* or *citima*. But I have entirely failed, after repeated attempts extending over twenty years, to recognize two species amongst my local material, either on treacled posts, flying round a lamp, feeding on flowers, or in the collection. Smith claimed genitalic differences for most of the above named forms, though admitting that they were so slight as to be scarcely noticeable.

Belangeri Morr., found locally in the Province of Quebec, is most suspiciously like a rather suffused fuscous race of *conradi*. I am indebted to Mr. Winn for a nice series, and am able to match more than one of the specimens almost exactly with some of my local *lineosa*. The type is probably in the Tepper collection, but I do not know its origin. Sir George Hampson makes it a synonym of *inficita* Walk., apparently correctly, though that is an unusually even red specimen. It is the specimen figured fairly well, but is a male, not a female. It was described from an unknown locality.

Agroperina is a new generic name used by Sir George Hampson for the foregoing group, and a few other species hitherto standing with *Orthosia*.

(To be continued.)

ENTOMOLOGICAL SOCIETY OF ONTARIO.—FIFTIETH ANNIVERSARY

At the regular meeting of the Society, held on Friday, March 14th, it was decided to hold the Annual Meeting of the Entomological Society of Ontario and the celebration of the 50th anniversary of its formation at the Ontario Agricultural College, Guelph, on Wednesday, Thursday and Friday, August 27th, 28th and 29th. A committee to make all necessary arrangements was appointed, consisting of the following: Professors Bethune, Howitt and Jarvis, and Messrs. Caesar, Baker and Spencer, of Guelph; Dr. E. M. Walker and Mr. A. Cosens, of Toronto; Dr. C. Gordon Hewitt and Mr. Arthur Gibson, of Ottawa, and Messrs. H. H. Lyman and A. F. Winn, of Montreal, with power to add to their number.

As the time of the meeting will be during the first week of the Toronto Exhibition, reduced railway rates will be available as far as that city. The committee will welcome suggestions from any of the members of the Society regarding the best methods of carrying out this celebration.

At a previous meeting a resolution was adopted expressing sympathy with the Royal Geographical Society of London, England, in the loss sustained by them and by the scientific world in general through the death from cold and exhaustion of Captain Scott and his brave companions.

The habitat of *Rhogas indicus* Cam.—In Wien.Ent. Zeit., 1910, p. 3, Cameron has described a new species under the above name, giving as habitat "Sitka on the Ganges (Mannerh?)" There may possibly be some locality Sitka on the Ganges river, but "Mannerh" is apparently an abbreviation of Mannerheim, who possessed many insects from Sitka in Alaska, and this is, I think, certainly the true habitat of the species.

E. Bergroth.

ROBBER-FLY AND TIGER-BEETLE.

On August 21st, 1909, while walking across a young orchard in Peachland, B. C., I flushed a tiger-beetle which flew a few yards. Seeing that it was of a species new to me, I promptly followed it.

Again it flew, but was at once pounced upon by a large robber-fly, *Proctacanthus milberti* Macq., which had been poised on a weed near by.

As the fly flew heavily away with its prey, I netted both. The robber refused to be parted from its dinner, and both were put in the cyanide bottle. Although but a few seconds had elapsed from the seizing of the tiger by its enemy, the poor thing was quite dead, the robber's proboscis having pierced its body exactly between the elytra and about one-quarter of the length of the body from its base.

The beetle proved to be *Cicindela purpurea*, and, strange to say, is the only one I have seen during three visits, each of several weeks, to the valley.

J. B. WALLIS.

NOTES ON THE DEATH FEINT OF CALANDRA ORYZÆ LINN.

BY HARRY B. WEISS, NEW BRUNSWICK, N.J.

In the course of some fumigation work against this insect, which is the common widely distributed "rice weevil," it was noticed that the duration of its death feint was exceedingly brief —so brief, in fact, as to cause one to wonder of just what value such a brief feint was to the weevil. The duration of each feint was ascertained in a number of weevils, and the following table gives the length of time in seconds of the first twenty-five feints in six different weevils. The temperature during these operations was 75°F., and the feint was induced by blowing upon the insect's ventral side or by dropping it through the space of one inch. When dropped from a height of six or eight inches, or more, no feint was produced, the weevils in all cases becoming immediately active.

May, 1913

Duration in seconds of first 25 death feints in 6 weevils

A	B	C	D	E	F
3	1	1	1	5	15
1	8	1	3	5	13
1	5	3	5	7	15
8	5	1	1	10	12
1	4	1	2	2	3
20	7	4	5	4	3
1	7	8	5	2	5
10	5	7	7	2	7
20	10	5	5	2	8
25	10	2	5	10	3
1	7	5	8	3	2
3	17	2	9	4	1
1	7	10	2	3	1
1	7	1	1	1	1
8	3	8	1	5	10
15	5	13	1	3	2
20	3	7	2	1	4
10	2	8	7	1	1
23	1	15	5	2	1
1	7	3	5	8	3
5	10	2	1	4	2
5	13	1	3	2	1
1	17	8	2	6	8
13	18	2	10	8	2
10	8	2	5	1	6
Averages .. 8.2	7.4	4.8	4.0	4.0	5.1

From these figures one can see what a wide variation in duration occurs in different individuals, and even in one individual. Twenty-five seconds was the longest feint, and the average ran

from four to eight seconds. Thirty-five was the highest number of successive feints it was possible to produce in one individual. After the thirty-fifth, they became only partial—that is, one or two of the legs would stick out from the body as if fatigued.

During every feint the insect was placed on its dorsum, as only in this manner was a successful fe'nt produced. When the insect was placed on its ventral side in almost evey case, the feint would last only a second. On account of the shortness of the feint, it was almost impossible to try the effect of gases, etc. Upon subjecting individuals feigning death to the fumes of carbon bisulphide and chloroform, they instantly became active. Upon placing other feigning weevils upon blocks of ice, they slowly assumed the death attitude, the femurs taking a position at right angles to the body, with the tibiæ and tarsæ loosely folded upon each other—all tending somewhat to bunch together. Individuals starved to death assumed a similar attitude.

The death feigning attitude is quite unlike that of death. The distal ends of the femurs of the first pair of legs extend forward, being pressed against the base of the snout. The femurs of the second pair of legs also extend forward, and are held close to the body. The third pair assume a position similar to the second, except that the distal ends point toward the posterior end of the body. The femur, tibia and tarsus are in all cases folded upon each other and drawn close to the body, while the antennæ take a position parallel to and close against the snout. The entire attitude, however, does not seem to be as rigid as that assumed in the death feint of the plum curculio, but is apparently easily and instantly relaxed.

The value of this brief death feint to the weevil is hardly apparent. Probably on account of its somewhat concealed method of feeding, it has little occasion to feign death, and as a result the duration is correspondingly short.

ERRATA.

Page 2, line 31.—For narrower, read narrow.
Page 3, line 12.—For Manse, read Manee.
Page 7, line 23.—For ♂, read ♂ ♀
Page 9, line 3.—For *annulicomis*, read *annulicornis*.

ON SEVERAL NEW GENERA AND SPECIES OF AUSTRALIAN HYMENOPTERA CHALCIDOIDEA.

BY A. A. GIRAULT, BRISBANE, AUSTRALIA

(Continued from page 106.)

Tribe Haltichellini.

Genus *Stomatoceras* Kirby.

1. *Stomatoceras victoria* new species.

Female: Length, 4.25 mm.

Black, somewhat shining; tegulæ, legs and basal half of abdomen ventrad (also latero-proximad), red, on the abdomen the reddish mixed with yellowish; scape (rest of antenna missing) black; fore wing with a smoky fascia across it at the stigmal vein (accented at the vein) and a rounded smoky spot farther distad nearer the costal wing margin and about half way to the wing apex from the stigmal vein, otherwise both wings hyaline.

Body rather finely rugoso-punctate, the spaces between the punctures smooth; lateral ocelli their own diameter from the eye margin or slightly more; scutellum terminating in two tooth-like plates, one on each side of the meson; abdomen finely reticulated; propodeum in the middle of the dorso-lateral aspect, with one distinct plate-like projection, another broader one indicated cephalad of it. Propodeum punctured like the rest of the thorax. Scape very long, bent at extreme tip, reaching to the cephalic ocellus, which is at the apex of the channel-like scrobicular cavity. Body finely pubescent. Posterior femur without a large tooth ventrad, its ventral margin straight but pubescent and along the distal two-thirds armed with a uniform series of minute, black, comblike teeth. Stylus of abdomen short. Postmarginal vein long.

(From a single specimen, the same magnification.)

Male: Unknown.

Described from a single card-mounted female specimen, labelled "*Cheltenham*, Victoria."

Habitat: Australia—Cheltenham, Victoria.

Type: No. *Hy 1185*, Queensland Museum, Brisbane, the above specimen; a fore wing and an antenna on a slide.

This species closely resembles *S. fasciatipennis* Bingham (1906), described from North Queensland and should be compared

with it. However, the second abdominal segment is plainly shorter than the remainder of the abdomen.

Later, among a small collection of *Chalcidoidea* given to me by Mr. F. P. Dodd, I found a species of Stomatoceras which agrees with the description of *S. fasciatipennis* Bingham. Also, it was mounted on a card containing a flat lepidopterous cocoon, in general outline shaped like a spool, from which projected an empty pupal case and also a number of small ants. This card was labelled "Townsville, Qld., 20, 5, 02. F. P. Dodd." Thus, this specimen (a female) is from the type locality of the Binghamian species, agrees with the description and appears to be a part of the same material, since its insect associates agree with those denoted by Bingham. Comparing this specimen (which I have identified as *fasciatipennis* and deposited in the Queensland Museum at Brisbane) with *victoria*, the difference between them becomes more apparent, since in the former the marginal vein is plainly longer and both the subfascia distinctly larger, especially the distal one, which extends distad half way to the apex. Also, the second abdominal segment is somewhat longer in *fasciatipennis*, the third and following segments short, but (segments 3–5) nearly twice the length of the corresponding segments in *victoria*. Otherwise, the two are much alike. A balsam slide bearing an antenna and a posterior leg goes with the cardmount.

2. *Stomatoceras hackeri* new species.

Female: Length, 4.50 mm.

The same as the preceding species (*victoria*), but the scape is also dark red, including also the long pedicel and the first two funicle joints (and a part of the third); the abdomen is reddish, only along the median line of the venter; the fore wings have the same general pattern (as regards fuscation), but they are more irregularly fumated, the two fumated areas less distinctly separated, especially caudad. The posterior femora beneath are toothed less farther proximad and the apical emargination (a convexity) is more pronounced (this crenulation of the margin should not be confused with the first tooth in the family which is usually large); also from between the fine black teeth arise series of solitary, erect, stiff, but short bristles. The postmarginal vein is long.

(From a single specimen, the same magnification.)

Male: Not known.

Described from a single female specimen, minutien-mounted, from the collections of the Queensland Museum, Brisbane, labelled "Brisbane.—H. Hacker.—8-8-11."

Habitat: Australia—Brisbane, Queensland.

Type: No. *Hy 1187*, Queensland Museum, Brisbane, the above specimen, minutien (abdomen separated), plus a slide bearing a fore wing and antennæ.

Stomatoceroides new genus.

Female: Similar to *Stomatoceras* Kirby, but the postmarginal vein well developed, longer than the short marginal vein, four times the length of the stigmal and slender. Antennæ 11-jointed, inserted below the ventral ends of the eyes, the club solid, only slightly shorter than the long proximal funicle joint (a third shorter), the scape simple, long, the pedicel short, the flagellum cylindrical and a single ring joint present. Posterior femora without large teeth beneath, but their ventral margin crenulate or wavy, there being three sloping convexities, the distal two bearing a continuous series of minute, black comblike teeth (along the distal half of the margin). Scutellum terminating in a small, bidentate plate. Metathorax with no dorsolateral projections. Vertex very thin, the cephalic ocellus within the scrobicular cavity, the lateral ocelli distinct from the eye margins. Pronotum thin mesad, broadening laterad. Abdomen not produced distad, normal, the second segment largest.

Type: The following species.

1. *Stomatoceroides bicolor* new species.

Female: Length, 4.10 mm.

Opaque black, the legs dark reddish excepting nearly the whole of the upper margin of the posterior femur, the coxæ, the proximal halves of the tibiæ and the same portions of the cephalic and intermediate femora, all of which are black. Venation brown, the fore wings with a distinct, rounded brownish spot under the marginal vein (against it) and with a larger stain distad more or less obscure and cephalad. Head and thorax rugoso-punctate, the spaces between the punctures with fine grooves, the abdomen, finely densely polygonally reticulated, but the second segment

smooth and shining. Antenna wholly black, the distal two funicle segments subequal, each slightly less than half the length of the proximal funicle joint.

(From a single specimen, the same magnification.)

Male: Not known.

Described from a single cardmounted female specimen labelled "Dandenong Ranges, Victoria."

Habitat: Australia—Victoria (Dandenong Mountains).

Type: No. *Hy 1186*, Queensland Museum, Brisbane, the above specimen; also a slide bearing an antenna and a second one, an antenna and a posterior leg.

The following species were thought to represent a new genus, but are all components of this one. Their generic characters are given herewith.

The same as *Stomatoceras* Kirby, the antennæ 11-jointed, the pedicel very small; the scrobicular cavity extends nearly to the occipital margin; thus the vertex acute or like a transverse carina along the occipital margin; the lateral ocelli are not within the scrobicular groove, but between its lateral margin, the eye and the true occipital margin, meso-caudad of the eye; the cephalic ocellus, however, just at the apex of the cavity. Postmarginal vein longer than the moderately long marginal, the stigmal vein very short, sessile and oval, small; submarginal vein more than four times the length of the marginal. Scutellum terminating in a small, bidentate plate. Posterior femora beneath simple—that is, without one or two large teeth, with the black, comblike teeth along distal two-thirds or more of the margin, and hairy; ventral margin of the femur straight. Propodeum with at least one dorso-lateral tooth. Antennæ long, cylindrical, without a ring-joint. Abdomen ovate.

The genus *Stomatoceroides* is more like *Hippota* Walker, but the flagellar joints are much longer, the pedicel smaller, the posterior femora armed and straight beneath, the vertex carinate, the propodeal tooth not prominent, the stigmal vein sessile, the wings clouded.

2. *Stomatoceroides nigricornis* new species.

Male: Length, 4.1 mm. Slender.

Opaque black, the base of the abdomen shining. Marked with dark red (Garnet) as follows: The tegulæ, tarsi, knees, tips of tibiæ and a spot at base of posterior femur (ventrad and exteriorly). Fore wings with two obscure brownish cross-bands—one at the marginal vein and the other nearly half from there to apex; the first accented under the marginal vein, the second more noticeable a short distance out from the costal margin. Venation dark. Rugoso-punctate, the abdomen distad with fine polygonal reticulations.

(From one specimen, the same magnification.)

Described from a single male specimen, minutien-mounted, labelled "Brisbane, 12–5–11." From the Queensland Museum.

Habitat: Australia—Brisbane, Queensland.

Type: No. *Hy 1188*, Queensland Museum, Brisbane, the above specimen; antenna and posterior leg on a slide.

3. *Stomatoceroides versicolor* new species.

Female: Length, 4.0 mm. More robust than the preceding.

Opaque black, the proximal half of the abdomen and the caudal coxa and femur contrasting, bright orange yellow, with some reddish mixed in; legs otherwise black, the knees brownish; antennæ black; tegulæ black. Wings opaque, the venation dark, the marginal vein with a very distinct, sub-elongate dark brown spot under it, which does not tend to cross the wing, but is wider (proximo-distad) than long (cephalo-caudad).

Structurally agreeing with the type species, but the stigmal vein is curved slightly cephalad, the body is more robust, the antennæ very much the same, but the posterior femora beneath with the fine, black, comblike teeth only along the distal third.

(From one specimen, the same magnification.)

Male: Not known.

Described from a single female, minutien-mounted, from the collections of the Queensland Museum, labelled "Hacker, Brisbane.—6–4–11."

Habitat: Australia—Brisbane, Queensland.

Type: No. *Hy 1189*, Queensland Museum, Brisbane, the forenoted female on minutien mount, plus the flagellum on a slide in xylol-balsam.

4. *Stomatoceroides nigripes* new species.

Female: Length, 5.00 mm.

Opaque black, the tarsi fuscous, the wings hyaline, the venation dark, with only a trace of staining under them. Like *versicolor*, but the teeth of the posterior femur along as much as the distal two-thirds of the ventral margin. Antennæ as in the other two species, but the funicle joints are longer.

(From a single specimen, similarly magnified.)

Male: Not known.

Described from a single female, cardmounted, kindly given to me by Mr. F. P. Dodd, of Kuranda, North Queensland. The specimen was labelled "From pupa of the red ant moth, Townsville, 7-11-03.—F. P. Dodd."

Habitat: Australia—Townsville, Queensland.

Type: No. *Hy 1190*, Queensland Museum, Brisbane, the foregoing specimen on a card, plus female antenna and posterior femur on a slide together in xylol-balsam.

Family Callimomidæ.

Podagrionini.

Pachytomoides new genus.

Female: Somewhat similar to *Pachytomus* Westwood and *Podagrion* Spinola, but the antennæ lack the ring-joint and the club is enlarged, as compared with the slender filiform funicle. The second and third tarsal joints are slender. The stigmal vein has a very short neck. Ovipositor very long. Wings infuscated. Propodeum with a semicircular carina at apex around the insertion of the abdomen.

Male: Probably the same.

Type: The following species (*mirus*).

1. *Pachytomoides mirus* new species.

Female: Length, 5 mm., excluding the long, slender and curled ovipositor, which is fully 7 mm. long.

Bright metallic green, the propodeum and head metallic bluish, the abdomen red, except broadly at base above; the fore and intermediate legs reddish brown at the knees, tarsi, tips of tibiæ, proximal third of the swollen femur and distal third of the long subtriquetrous posterior coxa. Ovipositor very thin, fuscous, its valves black. Fore wings irregularly, lightly stained with

brownish, the venation black. Eyes red, the ocelli darker red. Antennæ with the scape and pedicel brown, the remaining joints black.

Head and thorax very finely reticulately punctate; abdomen tapering at base, but not petiolate, strongly compressed. Ocelli distant from the eyes. Propodeum with larger reticulate punctures, its dorsum rounded, without a median carina. Postmarginal vein twice the length of the stigmal, the marginal very long, not much shorter than the submarginal. Distal third of scutellum and the mesopostscutellum smooth, but finely, closely, polygonally reticulated. Proximal abdominal segments, with very minute pin-punctures, the distal segments glabrous. Posterior coxae sculptured like the postscutellum, the posterior femur beneath armed with nine large, black, unequal teeth; the first (proximal), eighth and ninth largest; the latter stoutest, triangular, tooth 8 longest, columnar; the seventh next to the shortest, paired—that is, a bidentate, erect plate; the two dentations here counted as separate teeth, though united at base; the two teeth equal; teeth 4 and 5 unequal, also more or less united at base; tooth 2 shortest, obtuse, nipplelike.

Antennæ inserted in the middle of the face, 13-jointed, the funicle filiform, but its distal joint widening somewhat, becoming wider than long; scape simple, not as long as the club; pedicel somewhat longer than the first funicle joint; joint 2 of funicle longest, joint 3 next, the distal joint shortest; joint 5 subequal in length to the pedicel, the following funicle joints all shorter, club joints nearly equal, the distal one slightly the longest.

(From a single specimen, the same magnification.)

Male: Not known.

Described from a single female, minutien-mounted, in the collections of the Queensland Museum, labelled "Q. M. Brisbane. H. Hacker.—20–5–1911."

Habitat: Australia—Brisbane, Queensland.

Type: No. *Hy 1191*, Queensland Museum, Brisbane, the forc-described female on a minutien mount, plus one slide of xylol-balsam bearing the antennæ and a posterior femur.

2. *Pachytomoides greeni* (Crawford).

Podagrion greeni Crawford, 1912,* pp. 3–4; fig. 1.

This Cingalese species reared from the eggs of a mantid must be referred to this genus, though the female bears an abdominal petiole. Otherwise, it agrees with the species generically.

NEW ICHNEUMONOIDEA PARASITIC ON LEAF-MINING DIPTERA.

BY A. B. GAHAN, MARYLAND AGRICULTURAL EXPERIMENT STATION.

With a single exception the type specimens of the seven supposed new species described in the following paper were furnished by Prof. F. M. Webster, of the United States Department of Agriculture, and the designated hosts are on his authority. The types of one species were reared by the writer.

Family BRACONIDÆ.

Sub-family Opiinæ.

Opius utahensis, n. sp.

Female.—Length, 2.25 mm. Head transverse; vertex, temples, cheeks and occiput smooth and polished with sparse whitish hairs, the frons bare except along the eye margins; face with distinct round punctures and moderately hairy; clypeus fitting closely to the mandibles; mandibles without a notch on the ventral margin; antennæ longer than the body, pubescent, 32-jointed in the type, the first flagellar joint one-third longer than the second. Propleuræ with very fine reticulate sculpture; mesonotum with a median dimple-like impression before the scutellar fovea, parapsidal furrows deeply impressed at the anterior lateral angles, but entirely effaced on the disc; mesopleuræ reticulately sculptured on the disc, with a broad, rugose or foveolate furrow along the dorsal and anterior borders joining a similar furrow which separates the mesopleuræ from the mesosternum; propodeum and metapleuræ strongly rugose. Wings hyaline, stigma lanceolate emitting the radius at about the basal one-third; the radius strongly angulated at the second cubital cross vein, attaining the margin of the wing some distance above the extreme wing apex, its first abscissa less than

*Proc. U. S., National Museum, Vol. 42.

half as long as the width of stigma; second discoidal cell closed at the apex or nearly so. Abdomen broadly oval, the first dorsal plate rather thick, with precipitous edges and finely wrinkled, slightly wider at apex than at base and distinctly longer than broad; second segment two times as wide at apex as at base, smooth like the following segments; ovipositor slightly exserted.

Clypeus, mandibles, palpi, scape, tegulæ, base of wings, legs except apical joint of the tarsi, and abdomen except the first dorsal plate pale testaceous; apical joints of all tarsi, and the flagellum brown-black; wing veins and stigma brownish; remainder of the body black.

Male.—Essentially like the female, but with the antennæ 33-jointed in type.

Type locality.—Salt Lake, Utah.

Host.—*Agromyza parvicornis*.

Type No. 15591, United States National Museum.

One female and five male specimens from the type locality, labelled Webster, No. 8819.—C. N. Ainslie, collector.

Probably closest to *O. bruneiventris* Cr. of the described species, but readily separated from that species by the fact that in *bruneiventris* there is a distinct opening between the clypeus and mandibles, and the mesopleuræ are smooth and polished except for the oblique, foveolated furrow below the middle.

Opius suturalis, n. sp.

Male.—Length, 1.25 mm. Head transverse, smooth, with few hairs above; the face only slightly hairy; clypeus arcuate, leaving a transverse elliptical opening between it and the mandibles; antennæ pubescent, twice as long as the body, 22-jointed in the type. Thorax smooth and shining; mesonotum without a median depression posteriorly, the parapsidal furrows indicated only at the anterior lateral angles of the mesonotum; mesopleuræ smooth, with a shallow, ovate, non-foveolated impression below the middle; propodeum smooth and polished. Wings thickly ciliated; the stigma lanceolate, emitting the radius before the middle. The first abscissa of radius short, third abscissa attaining the wing margin far before the extreme wing apex; second discoidal cell not

completely closed at the apex. Abdomen spatulate, as long as the thorax, the first dorsal segment very finely but distinctly rugulose; second segment with a distinct transverse suture before the middle, which does not extend quite to the margins; the surface before the suture and for one-third of the distance beyond distinctly rugulose; segments beyond the second smooth. General color shining black; mandibles and palpi slightly fuscous; tegulæ testaceous; wing veins and stigma brownish; legs testaceous, their coxæ piceus. Abdomen wholly black.

Type locality.—Tempe, Arizona.

Host.—*Agromyza pusilla.*

Type No. 15592, United States National Museum. Two male specimens from the type locality, labelled Webster, No. 7215.—V. L. Wildermuth, collector.

Distinguished from *O. aridus* by the presence of a distinct transverse furrow on the second segment and by the rugulose sculpture of that segment. May possibly be the male of *O. nanus* Prov., from the type of which it differs, however, in the smooth propodeum and the wholly black abdomen.

Opius aridis, n. sp.

Female.—Length, 1.25 mm. Head perfectly smooth and polished, the face moderately hairy; vertex, temples and occiput with sparse, inconspicuous hairs; clypeus arcuated apically, leaving a distinct opening between it and the mandibles; antennæ somewhat longer than the body, 18-jointed in the type (varying from 18-jointed to 23-jointed in other specimens of the series), the first joint of the flagellum slightly the longest. Thorax smooth and polished; mesonotum without a median depression or furrow before the scutellar fovea, parapsidal furrows impressed at the anterior lateral angles of the mesonotum, but not attaining to the disc; mesopleuræ smooth, with a shallow, ovate, non-foveolated impression below the middle; propodeum moderately hairy, nearly smooth; the apical margin very slightly roughened. Wings densely ciliated, giving them a brownish tinge; stigma lanceolate, the radius arising before the middle, and attaining the wing margin above the extreme wing apex; its first abscissa shorter than the

width of stigma; second discoidal cell closed. Abdomen not longer than the head and thorax; the first dorsal segment longer than wide at apex, smooth and polished like the following segments: ovipositor sheath extending slightly beyond the tip of the abdomen. General colour, black; clypeus, mandibles and palpi stramineous; tips of mandibles brown; legs in the type stramineous, the apices of posterior tibiæ, their tarsi and the median tarsi fuscous (in other specimens of the type series the legs vary from pale stramineous to wholly dark brown); tegulæ and wing base brownish testaceous; 2nd segment of the abdomen more or less stramineous, first segment and those beyond the second piceous to black; ovipositor sheath black.

Male essentially like the female, but with the antennæ 20- 23-jointed.

Type locality.—Tempe, Arizona.

Host.—*Agromyza pusilla.*

Type No. 15593, United States National Museum. The type series contains 10 females and 10 males, labelled Webster, No. 7215.—V. L. Wildermuth, collector.

This species in general appearance closely resembles *Opius* (*Eutrichopsis*) *agromyzae* Vier., which is parasitic on the same host. It may be distinguished from that species, however, by the non-foveolated impression on the mesopleuræ and the smooth first abdominal segment.

Opius bruneipes, n. sp.

Female.—Length, 1.25 mm. Head perfectly smooth and highly polished; face sparsely hairy; vertex, temples and occiput with a few scattering and inconspicuous hairs; clypeus arcuated on the anterior margin, leaving a transverse, elliptical opening between it and the mandibles; antennæ longer than the body, pubescent 21-jointed in the type, the first joint of flagellum slightly longer than the second. Thorax smooth and highly polished, robust, without a median dimple-like depression on the mesonotum, parapsidal furrows wholly effaced or represented by only a few indistinct punctures at anterior lateral angles; mesopleuræ without a trace of an impressed furrow above the coxæ; propodeum entirely smooth and polished, with very few hairs; metapleuræ also smooth.

Wings densely ciliated; the stigma lanceolate and rather broad, much broader than the first abscissa of radius is long; radius arising much before the middle and attaining the wing margin far above the extreme wing apex; its first abscissa very short; second discoidal cell open below at the apex. Abdomen ovate, about as long as the thorax; its first dorsal segment smooth and polished, or nearly so; following segments also smooth; second segment more than twice as wide at apex as at base; following segments tapering to the apex; ovipositor slightly exserted. General color black; mandibles brownish, tips black; palpi fuscous; scape dark brown, flagellum brown-black; tegulæ black; wing veins and stigma brownish; legs including coxæ, dark brown; the anterior pair slightly paler; first and second abdominal segments brownish; following segments black; ovipositor sheath black.

Male.—Essentially as in female.

Type locality.—Lakeland, Florida.

Host.—*Agromyza pusilla*.

Type No. 15594, United States National Museum. The type series consists of three females and three males from the type locality, labelled Webster, No. 9489.—G. G. Ainslie, collector.

The species is distinguished from *O. aridus* by the total absence of the mesopleural furrow, and the open second discoidal cell as well as by the dark brown legs and fuscous palpi.

Opius succineus, n. sp.

Female.—Length, 2 mm. Head transverse, smooth and polished, sparsely hairy; the face moderately hairy, impunctate, with a rather more distinct median ridge than usual; clypeus arcuate, leaving a transverse, elliptical opening between it and the mandibles; antennæ longer than the body, pubescent, 29-jointed in the type. Propleuræ smooth; mesonotum with a median dimple-like impression before the scutellar fovea, the parapsidal furrows distinctly impressed anteriorly for nearly one-third the length of the mesonotum and faintly traceable as shallow impressed lines to the median dimple; mesopleuræ smooth, but with a strongly oblique foveolate furrow below the middle; propodeum indefinitely sculptured faintly rugulose, with a sinuous, transverse raised line or carina near the middle. Wings hyaline, the stigma lanceolate;

the radius arising near the basal one-third of the stigma and attaining the wing margin only slightly above the wing apex; its first abscissa about as ong as half the width of stigma; second discoidal cell closed. Abdomen broadly oval; the first dorsal plate distinctly longer than broad, abruptly narrowed before the middle, indefinitely rugulose; segments beyond the first smooth; ovipositor slightly exserted. General colour brownish yellow; vertex, occiput and temples black; cheeks and face reddish testaceous; ovipositor black; wing veins and stigma brownish; the dorsal abdominal segments beyond the second brownish; scape and legs pale amber.

A male paratype is like the female in sculpture but much darker in colour; the thorax above and at sides strongly tinged with brownish.

Type Locality.—Lafayette, Indiana.

Host.—*Agromyza* sp., mining leaves of Panicum.

Type No. 15595, United States National Museum. The female type is labelled Webster, No. 3814, W. J. Phillips, collector. The male bears the same number, but was collected by P. Luginbill. Another male specimen, labelled Webster, No. 9302—J. J. Davis, collector—was reared from the same source at Danville, Illinois.

This species superficially resembles *Opius diastatae* Ashm., a parasite of the corn leaf-miner, which was described by Ashmead under *Bracon* (Proc. U. S. Nat. Mus., 1888, p. 617). It may be distinguished from that species by the foveolate mesopleural furrow and the dimple-like median impression on the mesonotum.

Family ALYSIIDÆ.

Subfamily Dacnusinæ.

Dacnusa scaptomyzae, n. sp.

Female.—Length, approximately 2 mm. Head transverse, nearly twice as broad as long; above perfectly smooth and highly polished, with a very few scattered whitish hairs on the vertex and occiput; occiput concave; temples broad and slightly rounded; vertex divided by a shallow median groove, running from the anterior ocellus to the occiput; eyes bare, ovate; face with moderately dense whitish pubescence, smooth or nearly so, the punctures being very minute, a rather distinct median carina on the upper half; maxillary palpi 6-jointed, the two basal joints about equal in

length and together scarcely longer than the third; labial palpi 4-jointed; mandibles 3-toothed, the median tooth longest and acute; the two laterals short and blunt; antennæ pubescent, 23-24 jointed, a little longer than the body; first joint of the flagellum longer than the second, following joints decreasing in length to the tip.

Thorax smooth and shining; prothorax short, mostly concealed from above; mesonotum gibbous, polished, without pubescence, except for four or five hairs on each lobe opposite the base of the wings; parapsidal furrows impressed anteriorly for about one-third the length of the mesoscutum, a short longitudinal incision on the median line just before the scutellum, varying somewhat in length, but never extending more than half the length of the mesonotum; scutellar fovea broad and deep, with several carinæ crossing it at the bottom; mesopleuræ smooth, polished, glabrous, except for a few hairs at the posterior angle, just above the median coxæ, and with a shallow longitudinal smooth depression below the middle; metapleuræ moderately hairy and mostly rugulose, the disc smooth; propodeum finely rugose, more strongly so posteriorly, not conspicuously pubescent, but with a few scattering hairs most abundant laterally. Wings hyaline, iridescent; stigma long, lanceolate, rather broad, extending half the length of the radial cell; radius arising at about the basal one-third of the stigma and attaining the wing margin about half way between the apex of stigma and the extreme wing apex, its first abscissa nearly perpendicular and slightly longer than the width of stigma; second abscissa slightly straightened toward the wing margin, but not concave beneath, radial cell broad; cubital cross-vein oblique, somewhat longer than the first abscissa of radius; recurrent nervure oblique, joining the first cubital cell before the cubital crossvein, a distance equal to about half the length of the cubital crossvein; first discoidal cell smaller than the first cubital, submedian cell slightly longer than the median, the second discoidal completely closed.

Posterior legs longer than the body, the two trochanter joints together about as long as their coxæ, tibiæ as long as the femora and trochanters combined, tarsi as long as the tibiæ, the first joint nearly twice the length of the second.

Abdomen subsessile, as long as the thorax, ovate, squarely cut off at the apex, the apical segments retracted; first segment rugose, broader at the apex than at the base, as long as the posterior coxæ, its spiracles about midway of the segment and prominent, basally the segment is bicarinate, the carinæ originating at the lateral and angles and meeting before the spiracles, back of the triangular area enclosed by the carinæ, the surface is convex, the posterior lateral angles depressed; segments beyond the first smooth and polished; ovipositor sheath about one-fourth the length of the abdomen.

Colour.—Shining black; palpi, labrum, scape and legs, including the coxæ, testaceous; mandibles slightly darker; flagellum brown-black, the basal oints paler; first segment of the abdomen black, the following dorsal segments very dark brown, the second segment often somewhat testaceous on the disk. Wing veins and stigma brownish testaceous.

Male.—Like the female in every respect, except that the antennæ are 24-25-jointed; the stigma is broader than the length of the first abscissa of radius, considerably broader than in the female; the abdomen is slightly longer than the thorax and attains its greatest width just before the apex, therefore not ovate, but spatulate.

Type locality.—College Park, Md.

Host.—*Scaptomyza flaveola* Meig.

Type Cat. No. 15596, U. S. National Museum. Paratypes in the United States National Museum and the Collection of the Maryland Agricultural Experiment Station.

During the season of 1912 the dipterous leaf miner *Scaptomyza flaveola* Meig. was collected by the writer in three different localities and on as many different dates. June 3rd, at Hyattsville, Md., it was found infesting the leaves of turnips in a small garden plot. Both larvæ and puparia were present in large numbers. The puparia were found either in the original larval mines or beneath wilted and fallen leaves on the ground. The majority seemed to have pupated in the leaves, and none seemed to have entered the soil to transform. Many leaves were collected and taken to the laboratory, and from these were reared during the month of June

a large number of the flies, and about an equal number of *Dacnusa scaptomyzae.*

July 1st, at Hancock, Md., mined leaves of radish were collected, from which were reared the same fly, as well as several specimens of the parasite.

July 30th, at College Park, Md., several cabbage plants growing in a box, where they had been seeded for transplanting, were found severely mined. Here again the same fly and many specimens of the parasite were reared during the month of August.

Dacnusa agromyzæ, n. sp.

Female.—Length, approximately 2 mm. Head twice as broad as long, smooth, with a very few scattering hairs on the occiput, vertex and cheeks; the face moderately hairy, with a slight median carina on the upper half; vertex not divided by a median furrow; eyes bare, ovate; maxillary palpi 6-jointed, the two basal joints together not as long as the third, the fourth joint as long as 1, 2 and 3 combined; labial palpi 4-jointed; mandibles with the two lateral teeth acute, the median tooth longer, with a distinct notch on its ventral margin near the base making the mandible appear four-toothed; antennæ 33-36-jointed, nearly or quite twice as long as the body; the first joint of the flagellum about equal to the scape and pedicle combined; following joints shorter and decreasing in length toward the tip.

Prothorax mostly concealed from above; mesonotum slightly bilobed owing to a broad depression extending from base to apex along the median longitudinal line, its surface anteriorly and medially punctate and covered with white hairs, the broad posterior angles opposite the tegulæ smooth and glabrous, parapsidal furrows not at all impressed; scutellar fovea deep, with several cross ridges at the bottom; mesopleuræ polished and glabrous except for a few hairs just above the median coxæ, with a shallow, longitudinal, smooth depression below the middle; metapleuræ covered with a dense, short, white pile, completely concealing its sculpture; propodeum high and broad, abruptly truncate posteriorly, rugose and covered with white pile, which is not as dense as that on the metapleuræ. Stigma linear and extending nearly two-thirds the length of the radial cell; radius arising at about the basal one-fourth of the

stigma; its first abscissa not quite perpendicular and slightly shorter than the cubital crossvein, second abscissa curving very slightly into the radial cell toward the apex and attaining the wing margin far above the extreme wing apex; recurrent nervure interstitial with the cubital crossve n; submedial cell longer than the median; second discoidal cell open beneath.

Posterior legs longer than the whole body, their tibiæ scarcely as long as the femora and two joints of the trochanter combined; coxæ equal to the first abdominal segment, first tarsal joint twice the length of the second.

First abdominal segment convex, rugose, wider at apex than at base; bicarinate at base, the carinæ orig nating at the lateral angles and converging posteriorly, but fading out before meeting; spiracles not prominent and placed slightly before the middle of the segment; sides of the segment paral el beyond the spiracles; the posterior lateral angles somewhat flattened; whole abdomen slightly longer than the thorax; the segments beyond the first smooth and but little wider than the first segment at apex, their sides parallel. Ovipositor sheath less than one-fourth the length of the abdomen.

Colour as in the preceding species, except that the legs are reddish testaceous and the abdomen, including the first segment, is brownish testaceous.

The male is like the female.

Type locality.—Lafayette, Indiana.

Host.—*Agromyza angulata*.

Type No. 15597, United States National Museum.

Four specimens received from Prof. F. M. Webster, reared by P. Luginbill, and bearing Webster's number, 9700.

This species would apparently fall in Foerster's genus Mesora, which genus is believed to be untenable.

NOTES ON SOME SPECIES OF THE GENUS PROSOPIS.

BY J. C. CRAWFORD, WASHINGTON, D. C.

Prosopis mesillæ Cockerell.

This is a valid species, and not a form of *P. cressoni* as it is given by Metz. Externally the two are easily separable. *P.*

cressoni has the propodeum coarsely sculptured, while *mesillæ* has it very finely wrinkled. The eighth ventral plates of the males are quite different, and are therefore figured. In *cressoni* the apical lobes are much shorter than the pedicel attaching them to the plate; in *mesillæ* they are longer than the pedicel.

Prosopis nelumbonis Robertson

Synonym *P. fossata* Metz.

The characters which Metz gives as distinguishing this species from all others—namely, the "coarse, dense, pit-like punctures over the entire head and thorax"— are almost the identical words used by Robertson in his original description of the species. The type of *fossata* is in the U. S. Nat. Museum, and I have carefully compared it with specimens of *nelumbonis* from Illinois.

Prosopis stevensi, new species.

Male.—Length, about 4.25 mm. Black, face below insertion of antennæ old ivory colour, with sparse punctures and silky from minute vertical striatulations, supra-clypeal mark extending upward between antennæ, truncate at tip; lateral face marks extending above insertion of antennæ, dilated above; slightly extending over antennæ and very slightly away from eye margin (fig. 5),

FIG. 3.
P. messillæ, male.—
Part of 8th ventral plate.

FIG. 4.
P. cressoni, male.—
Part of 8th ventral plate.

FIG. 5.
P. stevensi, male.—
Face.

face above insertion of antennæ, with rather close and coarse punctures; scape with an ivory stripe in front; flagellum reddish, dusky above; mesonotum with punctures similar to those on vertex, separated from each other by slightly less than a puncture width, surface between punctures lineolate; metanotum rugosopunctate; propodeum with the area not well defined, very coarsely rugose; laterad of it more finely rugose; propodeum sharply truncate behind, truncation surrounded by a salient rim; pronotum with two spots, tubercles, tegulæ with a spot, fore tibiæ with a stripe, mid

and hind tibiæ at bases and apices, and basal joints of all tarsi, ivory colour; mesopleuræ more coarsely punctured than dorsum; wings dusky; first abdominal segment finely sparsely punctured, punctures closer towards apex, second and following segments

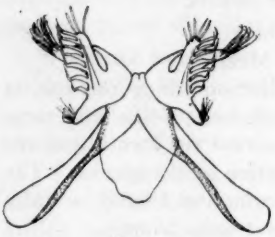


FIG. 6.
P. stevensi, male.—
Seventh ventral plate.

FIG. 7.
P. stevensi, male.—
Part of 8th ventral plate.

FIG. 8.
P. stevensi, female.—
Face.

more closely punctured. See figures 6 and 7 for structure of seventh and eighth ventral plates.

Female.—Length, about 5.25 mm. Similar to the male; face below antennæ more distinctly striatulate and more silky; a large mark on each side of face (see fig. 8), a spot on each side of pronotum, tubercles, a spot on tegulæ, a spot on fore and mid tibiæ at base and a broad annulus on base of hind tibiæ, ivory colour.

Type locality.—Fargo, N.D.

Type male collected Sept. 6, 1912 (Stevens No. 4154); allotype female the same date (Stevens No. 4152); paratype female, Sept. 8, 1912 (Stevens No. 4194); paratype female, Aug. 26, 1912 (Stevens No. 3947). All four specimens taken on *Melilotus alba* by Mr. O. A. Stevens, after whom the species is named.

Type Cat. No. 15530, U. S. N. M.

Two paratype females in collection Mr. Stevens.

In the classification of the genus by Metz, this species belongs to his *cressonii* division and to the *tridentulus-grossicornis* group and differs from these two species in the male having fewer teeth on the outer margin of each wing of the seventh ventral plate, in these teeth being stouter and more markedly turned up at end. Neither of the older species has the propodeum strongly rugulose nor so abruptly truncate, and the face markings are quite distinct, etc.

OBITUARY.

We record with much regret the death of Miss Mary E. Murtfeldt, which took place at her residence in Kirkwood, Mo., on the 23rd of February last. She was a contributor from time to time to the pages of this magazine and a subscriber for a long series of years. When the late Dr. C. V. Riley was State Entomologist of Missouri she gave him much material assistance, studying and recording the life-histories of many species of insects in the preparation of his series of reports on the Insects of Missouri, which are amongst the most valuable of his writings. After his appointment to be Chief of the Bureau of Entomology at Washington, she continued her interest in entomology. Her contributions were always of much value, as she was very painstaking and accurate in her observations. She belonged to several scientific societies, and was highly esteemed by all who had the pleasure of her acquaintance.

A NOTE ON *GRAPTA J-ALBUM*.

During the month of August, 1908, whilst camped in a mountain valley, engaged in collecting insects, I was interested to observe this butterfly attracted to a piece of bacon hanging in a small tree near the tent. It fluttered round for a few minutes and settled several times upon the bacon. Shortly it was joined by two other individuals, both of which alighted as did the first comer. They must have been attracted as are some other Lepidoptera, by the scent, perhaps. That the drawing power of the bacon was powerful was evident from the fact that during our stay of three days at this spot these butterflies were always to be seen during the warm part of the day hovering round what we called the bacon tree, and constantly alighting on and round the attractive board.

E. P. VENABLES.

BOOK NOTICES.

"INJURIOUS INSECTS: How to recognize and control them," by Prof. Walter C. O'Kane. The Macmillan Company, New York. 414 pages, 606 figures; $2.

The reviewer's pen has hardly dried after noticing Prof. Sanderson's manual of injurious insects when his successor, as Entomologist to the New Hampshire Experiment Station, adds another to the existing number of general works on injurious insects. The two outstanding features of the book are—first, the large number (over six hundred) of illustrations from the author's own photographs; and, second, the arrangement of his subject matter.

In regard to the illustrations: While the author is to be congratulated in his endeavor to provide entirely original illustrations, the preparation of which must have involved an enormous amount of labour, we must admit that in very many instances he would have been more successful in his representation of the insects had he given us line drawings or reproduced some of the really good available cuts. Those who have attempted it realize the difficulties of insect portraiture. The purpose of such illustrations is to facilitate the identification of the insects, but it must be confessed that a considerable proportion of the illustrations are not such as will provide a good means of recognition, especially in the case of larvæ. On the other hand, the author has in some cases given us excellent figures The illustrations would have been more valuable had the magnification been given when the insects are enlarged.

As a means of assisting in the identification of the insect pests of garden and field crops, of orchard and small fruits, all of the chief species of which are described, the author has arranged the insects belonging to these two groups according to the place where they are found at work. Insects working in the soil are considered first, then the borers within the stem, trunk or branch. These are followed by those feeding upon the surfaces of the same. Finally, he deals with the insects feeding on the leaves, flower and fruit in the order named. The leaf-feeders are also grouped. It is hoped by the author that this method of grouping will prevent the usual

duplication which sometimes cannot be avoided if the insects are grouped according to host plants, owing to many of the common species feeding on several species of plants. Insect pests of the household and of stored products are also described.

In chapters of varying lengths the morphology, internal structure, senses and behaviour, metamorphoses, classification and means of dissemination are described in language devoid of technicalities that might confuse the general reader. The preventive measures are well discussed, and the chapters on insecticides and fumigants and the methods of applying them form a useful section of the book and increase its value as a book of reference for those who have to deal with insect pests. A list is given of references to bulletins and reports containing detailed descriptions of the insects described in the book. An idea of the large number of insects which the author considers may be gathered from the fact that the index to the book covers twenty-four pages.

Covering the large field that it does, it is not surprising that inaccuracies occur, and space forbids a detailed reference to the same. In compiling information of so varied a character, greater care is necessary than when the information is the result of personal knowledge. A work of this character is an enormous undertaking nowadays, and we cannot but feel that the author would have produced a better book had he spent more time in its preparation. Nevertheless it will be a useful book, and the author deserves our thanks.

C. G. H.

Dolichopodidæ in Lundbeck's "Diptera danica."

Diptera Danica.—Genera and species of flies hitherto found in Denmark. Part IV., Dolichopodidæ. By William Lundbeck; 416 pp., 130 figs. (Copenhagen, G. E. C. Gad; London, William Wesley & Son.) Dec., 1912. $4.25.

After a lapse of two years since the previous part of this work appeared (reviewed in this journal, Vol. 43, April, 1911), the author gives us the fourth part, which treats of the single family Dolichopodidæ. Most entomologists know these small, usually

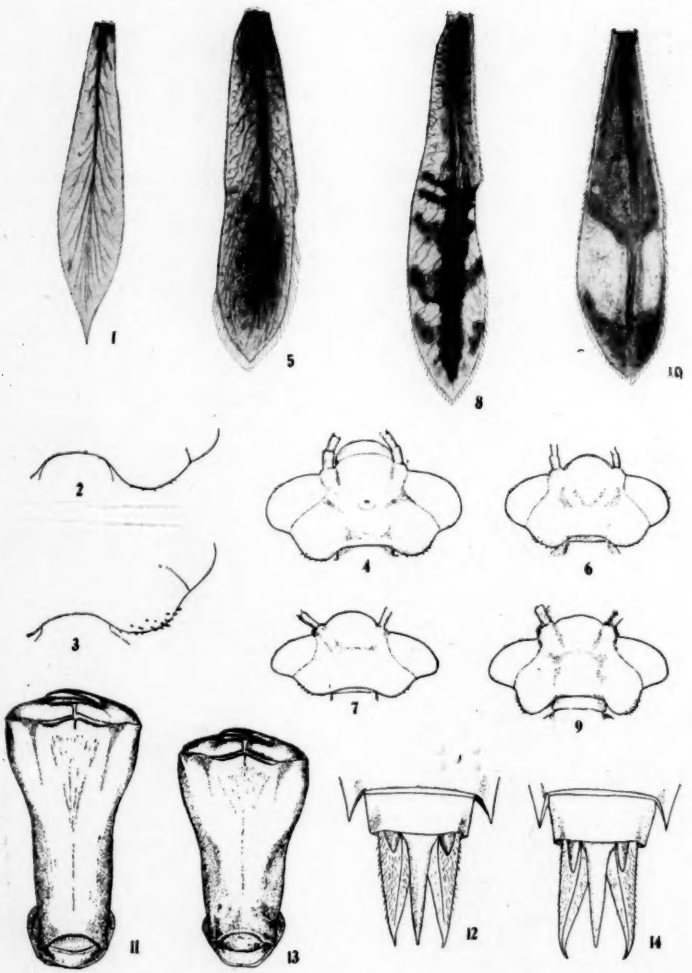
metallic golden-green, flies, which appear, as Verrall said, "to be standing on tiptoe," being raised on their front legs. Their wing venation is very characteristic. The most remarkable thing about the family, however, is the sexual dimorphism of the male, which reaches a higher degree of development in this family than in any of the other family of the Diptera. These secondary sexual characters occur primarily on the legs, but they are also found on wings, antennæ and facial region. Associated, as is usually the case, with these secondary sexual characters in the male Dolichopodids are remarkable "courting" habits, which not infrequently strongly recall the analogous amatory preliminaries on higher animals. The flies are all predaceous, feeding on other insects and small invertebrates, and are usually found on bushes, on low herbage and grass in woods and outside, generally in damp localities and more or less near water. In North America we have little information as to their life-histories; the larvæ occur in earth rich in vegetation and under the bark of trees. The species are distributed all over the world, two species of *Dolichopus* being found in Greenland. From North America about 526 species are known, from the palæarctic region about 586 species are known, and ten species are recorded as common to both regions.

Aldrich divides the family in North America into twelve subfamilies, and although the former worker has given no diagnoses, the author of the present work believes them to be good and natural. As he has only examined the Danish species closely, he follows the arrangement of the "Katalog der Palaärktischen Diptera," and divides the family into four subfamilies, at the same time admitting the heterogeneous nature of some of them.

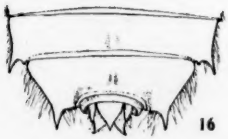
As in the previous parts of this excellent work, the author treats each species fully; where they are known, larval characteristics and habits are given, and the presence of one hundred and thirty figures, chiefly of the antennæ and wings, enhances the value of this further and most welcome addition to our dipterological literature. We look forward to the succeeding parts of this monumental work, in the preparation of which the author has our good wishes.

C. G. H.

Mailed May 17th, 1813.



NEW NYMPHS OF CANADIAN ODONATA.



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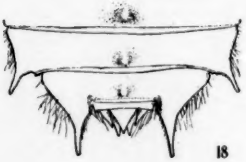

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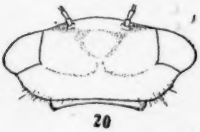

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